REMARKS

Claims 1-88 are pending in the case. Claims 57-58, 60, 62, 72-86, and 88 are amended. Claims 1-88 stand rejected. Claims 1-88 are rejected under 35 U.S.C. § 101. Claims 1-33 are rejected under 35 U.S.C. § 112, first paragraph. Claims 1-5, 7-10, 20-24, 26-30, 32-38, 40-43, 49-53, 55-61, 63-66, and 72-73 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,202,046 to Oshikiri et al. ("Oshikiri"). Claims 6, 11-15, 25, 31, 39, 44-48, 54, 62, 67-71, and 74 - 88 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Oshikiri in view of U.S. Patent No. 5,537,509 to Swaminathan et al. ("Swaminathan"). Claims 16-19 stand rejected under 35 U.S.C. § 103 as being unpatentable over Oshikiri in view of Swaminathan and further in view of U.S. Patent No. 5,960,389 to Jarvinen et al. ("Jarvinen"). The Applicants traverse and respectfully request reconsideration and withdrawal of the rejections in view of the following remarks.

The Office Action has objected to claims 74-86 and 88 for informalities. Accordingly, Applicants have amended claims 74-86 and 88 to adopt the Examiner's suggestion, for which Applicants thank the Examiner. Applicants respectfully request reconsideration and withdrawal of the objections.

35 U.S.C. § 101

The Office Action has rejected claims 1-88, alleging the claims are directed toward non-statutory subject matter. Applicants respectfully traverse and request reconsideration.

On page 3, the Office Action rejects claims 1-2, 4, 6, and 20-21 under 35 U.S.C. § 101, alleging the claimed invention is directed to non-statutory subject matter.

According to the Office Action, these claims, and their associated dependent claims do not produce a "useful, concrete and tangible result" because the final result of the invention is "abstract smoothed speech data and not a tangible real world output."

The Applicants respectfully traverse. Claims 1-2, 4, 6, and 20-21 recite *inter alia*, "a speech decoding **device,**" "a voice-less part decoding **circuit**" (claim 2), and a voice-less part **decoding unit**" (claims 1, 4, 6, and 20-21). A device and its components are unquestionably patentable subject matter.

The claims also recite a "speech signal." A signal representing, among other things, constituent parts of vocal sounds do not represent abstract concepts or ideas. Because a speech signal is manipulated in the claimed device, the claim recites a practical application produces a useful, concrete, and tangible result that is patentable subject matter. As such, Applicants respectfully urge the withdrawal of the rejections to claims 1-2, 4, 6, and 20-21 and their respective dependent claims.

The Office Action rejects claims 57-58, 60, 62, 72-73 under 35 U.S.C. § 101, because the claims are "drawn to a 'program' data structure per se, stored on a 'recording medium' not claimed as readable by a computer…." Applicants have amended the claims recite a "computer executable program."

Also, the claims recite, *inter alia*, "decoding [] speech signal[s]." A signal representing, among other things, constituent parts of vocal sounds do not represent abstract concepts or ideas. Accordingly, the claim recites a practical application that produces a useful, concrete, and tangible result that is patentable subject matter as a speech signal is decoded by the claimed computer program. Applicants respectfully

urge the withdrawal of the rejections to claims 57-58, 60, 62, 72-73 and the respective dependent claims.

Claims 34-35, 37, 39, and 49-50 stand rejected under 35 U.S.C. § 101 "for the same reasons as claims 57-58, 60, 62, 72-73." First, Applicants respectfully urge that the claims be considered on their own merits and not by reference to other independent claims. Next, Applicants note that the present claims are method claims, thus the Office Action's arguments directed towards a) structure that is not recited in the claim (e.g., "program instructions," "data structure," and "a computer readable medium") as well as b) "non-functional descriptive material" are not a proper basis for a rejection under 35 U.S.C. § 101. Finally, the claims recite, *inter alia*, "a method of decoding speech signals," and "a decoding operation." A decoding method that decodes a signal representing, among other things, constituent parts of vocal sounds, does not represent an abstract concept or idea, hence the claim recites a method that produces a useful, concrete, and tangible result that is patentable subject matter. As such, Applicants respectfully urge the withdrawal of the rejections to claims 34-35, 37, 39, and 49-50 and their respective dependent claims.

Applicants respectfully urge the withdrawal of all the rejections under 35 U.S.C. § 101.

35 U.S.C. § 112

Claims 1-33 stand rejected under 35 U.S.C. § 112, first paragraph. The Office Action alleges that the claims contain subject matter which was not described in the specification in such a way that enables one skilled in the art to which it pertains, or with which it is most merely connected, to make and/or use the invention. In

particular, the Office Action alleges that the claims are subject to an undue breadth rejection under 35 U.S.C. § 112, first paragraph because they are a single means claim, citing to the case *In re Hyatt*, 708 F.2d 712, 714-715, 218 U.S.P.Q. 195, 197 (Fed. Cir. 1983) as well as MPEP 2164.08(a). Applicants respectfully traverse.

With all due respect, Applicants urge that the Office Action has improperly applied 35 U.S.C. § 112, first paragraph because, *inter alia*, none of claims 1-33 are "means-plus-function" claims under 35 U.S.C. § 112, paragraph 6, much less "single means claims." Indeed, the Office Action admits that claim 1 recites "a voice-less decoding circuit for decoding . . ." and that claims 2, 4, 6, and 20-21 recite "a voice-less part decoding unit which changes . . . ." The claims do not, *inter alia*, use the term "means." In short, none of claims 1-33 are claims drafted in a means-plus-function format not drawn to a combination, *i.e.*, a single means claim.

With respect to, *inter alia*, the voice-less decoding circuit claimed in claim 1 or the voice-less part decoding unit in claims 2, 4, 6, and 20-21, as well as dependent claims 3, 5, 7-19, and 22-33, the specification of the present invention teach a skilled artisan how to make and use the full scope of the claimed invention without undue experimentation. Moreover, the Office Action's allegations that the claims "lack other means that enable the smoothing operation that the unit performs" is improper. The reason is because when analyzing the enabled scope of a claim, the teachings of the specification must not be ignored as claims are to be given their broadest reasonable interpretation that is consistent with the specification. That claims are interpreted in light of the specification does not mean that everything in the specification must be read into the claims. See MPEP 2164.08, internal citations omitted.

In view of the above remarks, Applicants urge reconsideration and withdrawal of the claim rejections under 35 U.S.C. § 112.

35 U.S.C. § 102

Claims 1-5, 7-10, 20-24, 26-30, 32-38, 40-43, 49-53, 55-61, 63-66, and 72-73 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Oshikiri. The Applicants traverse.

Turning first to independent claims 1, 34, and 57, each of the independent claims recite "smoothing at least one feature parameter representing spectral envelope characteristics." The Office Action alleges that column 20, lines 7-52 of Oshikiri teach this limitation. With all due respect, nothing in Oshikiri, including column 20, lines 7-52, teach or suggest smoothing at least one feature parameter representing spectral envelope characteristics. Quite to the contrary - and as admitted on page 5 of the Office Action, Oshikiri teaches smoothing a gain. The decoded gain parameter which is smoothed in Oshikiri is not a feature parameter representing spectral envelope characteristics; a gain is used to multiply an excitation signal that drives a synthesis filter (see Oshikiri at column 4, lines 45-50).

For an exemplary, non-limiting comparison, compare, *inter alia*, Figures 1, 3, 5, and 7 of the present application, whereby filter parameters are sent to a smoothing circuit. In contrast to the present invention, Figure 17 of Oshikiri shows that filter parameters are not smoothed; rather, the decoded synthesis filter parameters from the synthesis filter decoder 410 are sent directly to the synthesis filter 411. See, *inter alia*, Oshikiri at column 19, line 63 to column 20, line 52. Without limiting the scope that the claims are entitled to as drafted, the comparison shows that Oshikiri does not teach

"smoothing at least one feature parameter representing spectral envelope characteristics" as claimed in independent claims 1, 34 and 57.

Accordingly, Applicants urge that claims 1, 34, and 57 are presently in condition for allowance. As claims 22 and 28 depend from independent claim 1 and claim 51 depends from claim 34, Applicants urge that these dependent claims are also in condition for allowance. Accordingly, Applicants urge reconsideration and withdrawal of the rejections to these claims.

Turning to independent claims 2, 35, and 58, independent claim 2 recites "a voice-less part decoding unit which changes, according to an elapsed time from a time point when a transition occurs from the voice period to the voice-less period, a coefficient to smooth at least one of the feature parameters." Independent claim 35 recites "a decoding operation corresponding to received feature parameters according to whether the speech signals are classified as a voice period or a voice-less period" "smoothing at least one of the feature parameters according to an elapsed time from a time point when a transition occurs from the voice period to the voice-less period; and decoding the speech signal and the voice-less period by using this smoothed feature parameter." Independent claim 58 recites "changing a decoding operation corresponding to plural types of received feature parameters according to whether the speech are classified as being a voice period or in a voice-less period" and "smoothing at least one of the feature parameters according to an elapsed time from a time point when transition occurs from the voice period to the voice-less period." Nothing in Oshikiri, including the "hangover period" described in column 16 as well as column 20, lines 7-52 cited in the Office Action teaches or suggests the above-recited limitations.

First, as regards column 16, Oshikiri is perfectly clear that the hangover processing occurs in a hangover processing section of a background/classification apparatus. It is not a decoding unit, much less a voice-less part decoding unit. Moreover, as described there, the hangover processing section actually changes a decision result to forceably regard background noise as a signal component in a **speech period** for an interval corresponding to a predetermined number of frames (see column 16, lines 17-23). Thus, the background noise/speech classification apparatus does not decode the speech signal in the voice-less period as required by independent claims 2, 35 and 58.

Finally, as has been explained above, the smoothing described in Oshikiri at column 20 is smoothing a decoded gain. Assuming for the sake of argument that the embodiment described at claim 20 could be combined with the embodiment described in column 16, it is stated that the gain smoothing takes place in a background noise decoder, which is different than the speech decoder (see Figure 17, elements 404 and 405). As explained in column 16, the hangover processing section forces background noise to be regarded as in a speech period. When classified as a speech period, it would not be input into a background noise decoder. Yet the claims recite "decoding the speech signal in the voice-less period using the smoothed feature parameter." Accordingly, Applicants urge that independent claims 2, 35, and 58 are presently in condition for allowance and urge reconsideration and withdrawal of the rejections thereto. As claims 3, 7, 8, 10, 23, 29, 36, 40-41, 43, 52, 59, 63-64 and 66 each ultimately depend from independent claims 2, 35, and 58, the Applicants urge that these claims are in condition for allowance as well and urge reconsideration and withdrawal of the rejections thereto.

Turning next to independent claims 4, 37, and 60, independent claim 4 recites "a voice-less part decoding unit which changes a value of a coefficient used to smooth at least one of the feature parameters . . . and decodes a speech signal and a voice-less period by smoothing at least one of the feature parameters with the changed value of the coefficient." Independent claim 37 recites "smoothing at least one of the feature parameters according to the received feature parameters" and "decoding the speech signal and the voice-less period by using the smoothed feature parameter." Independent claim 60 recites "smoothing at least one of the feature parameters according to the feature parameters; and decoding the speech signal in the voice-less period by using the smothered feature parameter."

Again, nothing in Oshikiri teaches these limitations. Oshikiri's hangover processing occurs in a hangover processing section of a background/classification apparatus. It is not a decoding unit, much less a voice-less part decoding unit. Moreover, as described there, the hangover processing section actually changes a decision result to forcibly regard background noise as a signal component in a **speech period** for an interval corresponding to a predetermined number of frames (see column 16, lines 17-23). Thus, the background noise/speech classification apparatus does not decode the speech signal in the voice-less period.

As has been explained above, the smoothing described in Oshikiri at column 20 is smoothing a decoded gain. Assuming for argument's sake that the embodiment described at column 20 could be combined with the embodiment described in column 16, it is stated that the gain smoothing takes place in a background noise decoder, which is different than the speech decoder (see Figure 17, elements 404 and 405). As explained in column 16, the hangover processing section forces background noise to be regarded as in a speech period. When Oshikiri's speech is classified as a speech period,

it is not input into a background noise decoder. Yet the claims recite decoding the speech signal in the voice-less period as well as smoothing at least one feature parameter. Accordingly, Applicants urge that independent claims 4, 37 and 60 are presently in condition for allowance and urge reconsideration and withdrawal of the rejections thereto. As claims 5, 9, 24, 30, 38, 42, 53, 61, and 65 each ultimately depend from independent claims 4, 37 and 60, the Applicants urge that these claims are in condition for allowance as well and urge reconsideration and withdrawal of the rejections thereto.

Turning next to independent claims 20-21, 49-50, and 72-73, nothing in Oshikiri, including column 10, lines 7-12, column 20, lines 7-52 or Figure 17, all cited by the Office Action, teach or suggest the limitations of these claims. Independent claims 20 and 21 recite "a voice-less part decoding unit which generates signals in the voice-less period by feeding an excitation signal composed of plural types of signals to a synthesis filter and the voice-less period, wherein the voice-less part decoding unit comprises a weighting coefficient determining unit which determines a weighting coefficient used in a weighted sum operation of the plurality of types of signals in the voice-less period." Independent claims 49-50 and 72-73 each recite "determining a weighting coefficient used to generate an excitation signal over the voice-less period by performing a weighted sum operation of plural types of signals" and "generating the excitation signal based on the weighting coefficient." Oshikiri does not teach or suggest these limitations.

Independent claims 20 and 21 claims recite that "the voice-less part decoding unit comprises a weighting coefficient determining unit which determines a weighting coefficient used in a weighted sum operation of the plurality of types of signals." The Office Action alleges that the gain smoothing section in Figure 17 of Oshikiri and the

gain smoothing shown in Figure 18 as well as the adder described in column 37, lines 6-23 show a weighting coefficient determining unit which determines the weighting coefficient used in a weighted sum operation of the plurality of types of signals in the voice-less period. However, even assuming that the gain smoothing is applied to an excitation signal, it is clear from looking at equations 19, 20, and 21 of Oshikiri (columns 20-21) that the gain smoothing does not use any "weighting coefficient used in a weighted sum operation of pluralities of types of signals." Indeed, there is nothing to indicate that any coefficient in columns 20-21 of Oshikiri is used in the sum operation of the plurality of types of signals in column 37, lines 6-23 of Oshikiri, assuming for the sake of argument that column 37 shows "an excitation signal composed of plural types of signals."

In contrast, Applicants respectfully direct attention to, *inter alia*, page 25, lines 10-29 as well as page 26, lines 25-29 of the present application, which explains:

> Next, description is made about the voice-less part examining circuit 38 and the mixing circuit 62. The voice-less part examining circuit 38 [of Figure 4] determines the characteristics of a background noise in a voice-less part, and changes a calculation method of the coupling coefficients of the pitch signal, the pulse signal, and the random signal in the mixing circuit, according to the determined characteristics. As set up parameters to be changed, there are an order to decide the coupling coefficients or a coupling coefficient[].

In the non-limiting example given in the quote above, the voice-less part examining circuit changes the calculation method of the coupling coefficients of the pitch signal, the pulse signal, and the random signal in the mixing circuit. Accordingly, the present application clearly shows "a weighting coefficient used in a weighted sum operation of the plurality types of signals." This example is given only in illustration, and is not

intended to limit the breadth of the claims to which they are entitled. However, the example illustrates that Oshikiri does not in any way show "a weighting coefficient used in a weighted sum operation of the plurality of types of signals." At best Oshikiri shows smoothing a gain, which is in no way related to a **sum operation** of **pluralities of types of signals**, much less a **weighted sum operation** of pluralities of types of signals, as claimed in independent claims 20-21, 49-50 and 72-73.

In light of the remarks above, Applicants urge that independent claims 20-21, 49-50, and 72-73 are presently in condition for allowance and urge reconsideration and withdrawal of the rejections thereto. As claims 26, 27, 32, 33, 55, and 56 all depend from the above-mentioned independent claims, Applicants urge that these claims are in condition for allowance as well and urge reconsideration and withdrawal of the rejections thereto.

35 U.S.C. § 103

Claims 6, 11-19, 35, 31, 39, 44-48, 54, 62, 67-71, and 74 -88 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Oshikiri and in view of Swaminathan. Claims 6, 39, and 62 are independent.

Turning to independent claims 6, 39, and 62, are independent. Independent claim 6 recites: "a voice-less part decoding unit which … decodes the speech signal in the voice-less period by smoothing at least one of the feature parameters with the changed value of the coefficient." Independent claims 39 recites "changing a decoding operation corresponding to received feature parameters according to whether the speech signals are classified as a voice period or a voice-less period" and "decoding the speech signal in the voice-less period by using the smoothed parameter." Independent

claim 62 recites "changing a decoding operation corresponding to plural types of received feature parameters according to whether the speech are classified as being a voice period or in a voice-less period" and "decoding the speech signal in the voice-less period by using the smoothed parameter." Nothing in Oshikiri teaches or suggests these limitations.

The Office Action rejects Claims 6, 39, and 62, stating Oshikiri "discloses the background noise decoder, as applied to claims 1 and 34". Applicants respectfully note that claims 1 and 34 are separate independent claims, and urges that the Office Action consider each claim on its own merits.

Turning to the substance of the rejections, nothing in Oshikiri, including the "hangover period" described in column 16 as well as column 20, lines 7-52 discussed above with respect to, *inter alia*, claims 1 and 34, teach or suggest the above-recited limitations. First, as regards column 16, Oshikiri is perfectly clear that the hangover processing occurs in a hangover processing section of a background/classification apparatus. Thus, Oshikiri's hangover processing section does not teach or suggest a decoding unit, much less a voice-less part decoding unit as is claimed in claim 6.

Moreover, as described in Oshikiri, the hangover processing section actually changes a decision result to forcibly regard background noise as a signal component in a **speech period** for an interval corresponding to a predetermined number of frames (see column 16, lines 17-23). Thus, Oshikiri's background noise/speech classification apparatus does not decode the speech signal classified in the voice-less period, as claimed in claims 6, 39, and 62. For the reasons given above, Oshikiri does not teach or suggest each and every limitation of independent claims 6, 39, and 62, and nothing in Swaminathan cures the deficiency of Oshikiri as applied to the independent claims.

Dependent claims 11-15, 25, 31, 39, 44-48, 54, and 67-71, and 74-88 ultimately depend from the independent claims of the present invention. As nothing in Oshikiri or Swaminathan cures the deficiency of the references as applied to the independent claims, Applicants urge that these claims are in condition for allowance and further urges reconsideration and withdrawal of the rejections thereto.

Claims 16-19 are rejected under 35 U.S.C. § 103 as unpatentable over Oshikiri in view of Swaminathan and further in view of Jarvinen. These claims depend on independent claims 1-2, 4, and 6. Nothing in Swaminathan, Oshikiri, or Jarvinen cures the deficiency of the Swaminathan and Oshikiri references, alone or in combination, as applied to the independent claims. Accordingly, Applicants urge that these claims are in condition for allowance and urges reconsideration of the rejections thereto.

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

No fee is believed to be due for this Amendment. Should any fees be required, please charge such fees to Deposit Account No. 50-2215.

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